DOCUMENT RESUME

ED 204 677 CG 015 295

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TITLE The Effects of Payment Contingency and Situational Norms for Payment on Intrinsic Motivation.
SPONS AGENCY Michigan Univ., Ann Arbor. Rackham Graduate School.
PUB DATE Apr 81
NOTE 14p.; Paper presented at the Annual Meeting of the American Educational Research Association (65th, Los Angeles, CA, April 13-17, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Compensation (Remuneration); *Contingency Management; Incentives; *Motivation Techniques; Participant Satisfaction; *Recognition (Achievement); Research Methodology; *Rewards; Self Concept
IDENTIFIERS *Intrinsic Motivation; *Situational Variables

ABSTRACT

Cognitive evaluation theory predicts that contingent rewards should be viewed as more controlling than noncontingent rewards and should be more detrimental to intrinsic motivation. An experiment to investigate the differential effect of performance-contingent and noncontingent rewards on intrinsic motivation yielded results consistent with predictions of self perception theory. Subjects found the task more enjoyable and were somewhat more likely to volunteer for future nonpaid experiments when a payment norm existed. Contrary to the prediction of cognitive evaluation theory, some evidence suggested that contingently paid subjects found the experimental task more enjoyable than the noncontingently paid subjects. However, this result was not consistent across the different measures of intrinsic motivation. (Author/JAC)

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ED204677

The Effects of Payment Contingency and Situational Norms for Payment on Intrinsic Motivation

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Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, April, 1981

CG 015295

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Abstract

An experiment was conducted to investigate the differential effect of performance-contingent and -noncontingent rewards on intrinsic motivation. These two conditions were crossed with two different situational norms regarding payment: a norm for payment and a norm for nonpayment. Consistent with the predictions of self-perception theory, subjects found the task more enjoyable and were somewhat more likely to volunteer for future nonpaid experiments when a norm for payment existed. Contrary to the prediction of cognitive evaluation theory, there was some evidence that contingently paid subjects found the experimental task more enjoyable than the noncontingently paid subjects. However, this result was not consistently found across the different measures of intrinsic motivation.

The Effects of Payment Contingency and Situational Norms for Payment on Intrinsic Motivation[1]

The potential negative effect of rewards on intrinsic motivation has become a popular issue in recent years. Expectancy x value theories of motivation (e.g., Atkinson, 1974) predict increases in motivation from extrinsic rewards. However, various studies have shown that an extrinsic reward can decrease intrinsic motivation for a task (e.g., Deci, 1971; 1972; Lepper, Greene, & Nisbett, 1973; Calder & Staw, 1975). Although this effect has been fairly pervasive, some studies have not found the predicted negative effect of extrinsic rewards (e.g., Arnold, 1976; Arkes, 1978). Interest in this issue is mainly a function of the potential practical applications of the effects of rewards on intrinsic motivation in both educational and industrial settings. There is presently a need to define the limiting conditions under which extrinsic rewards can be expected to decrease intrinsic motivation. Two factors which may be important are the contingency of the reward and the situational norms regarding rewards or payment.

Experiments designed to investigate the effects of rewards on intrinsic motivation often differ in terms of reward contingency. Some studies use performance-contingent rewards which require the subject to achieve a certain level of performance in order to receive the reward. Other studies utilize noncontingent rewards which are given to the subject simply for participating in the study and are not connected to performance at all. In a sense, these noncontingent rewards are contingent upon participation, but they are not contingent upon performance level.

Several studies have found a decrease in intrinsic motivation for contingently rewarded subjects on both behavioral and self-report measures when compared to control subjects who have not been rewarded at all (Deci, 1971; Pittman, Cooper, & Smith, 1977; Pritchard, Campbell, & Campbell, 1977; Harackiewicz, 1979). However, contingent rewards have also been found to enhance intrinsic motivation (Arkes, 1978). The results of studies examining the effects of noncontingent rewards have also been in conflict. Deci (1972) and Arnold (1976) have found noncontingent rewards to have no appreciable

[1]This research was supported by a dissertation grant from the Rackham School of Graduate Studies at the University of Michigan.

effect on intrinsic motivation. Other investigators have reported that noncontingent rewards can be detrimental to intrinsic motivation (Lepper, Greene, & Nisbett, 1973; Calder & Staw, 1975). The conflicting results in the literature emphacize the need to define the limiting conditions under which rewards can be expected to be detrimental to intrinsic motivation. Two of the most popular theoretical explanations for the negative effect of rewards on intrinsic motivation are cognitive evaluation theory and self-perception theory.

According to cognitive evaluation theory (Deci, 1975), any reward has two aspects, a controlling aspect and an informational aspect. When a person is intrinsically motivated to perform a task, the perceived locus of causality of the behavior is said to be internal. That is, the individual feels he/she engaged in the task for intrinsic rewards. However, if the individual receives an extrinsic reward for engaging in this same task, there may be a shift in the perceived locus of causality from internal to external. The individual perceives a behavior-reward instrumentality and in the future will engage in the task when extrinsic rewards are expected. This shift in the locus of causality is most likely to occur when the controlling aspect of a reward is most salient. If the informational aspect of a reward is more salient, the individual attends to the competence-level feedback provided by the reward and intrinsic motivation will increase or decrease depending on whether the feedback is positive or negative.

According to cognitive evaluation theory, contingent rewards are more likely to be viewed as controlling than are noncontingent rewards since contingent rewards are directly tied to performance. Contingent rewards will lead the individual to reevaluate his/her reason for engaging in the task and to view the reward as the primary reason for task involvement. Noncontingent rewards may reduce intrinsic motivation but to a lesser degree than contingent rewards because they are not directly tied to performance level. These predictions concerning the relative effects of contingent and noncontingent rewards have been supported in an experiment by Weiner and Mander (1978). However, cognitive evaluation theory cannot easily account for studies that have found a detrimental effect from noncontingent rewards.

Another explanation for the detrimental effect of extrinsic rewards on intrinsic motivation is derived from self-perception theory. According to self-perception theory, people frequently infer their attitudes from observing their own behavior. People make attributions about their level of intrinsic

and extrinsic motivation by performing a means-ends analysis. When both intrinsic and extrinsic factors are present, but the intrinsic factors are unclear, people tend to attribute their performance to the more obvious extrinsic reward. The salience of the reward is important here and not necessarily the contingency of the reward. Both contingent and noncontingent rewards are expected to be detrimental if they are salient. Experiments designed to test this theory have generally used noncontingent rewards which have resulted in decreased intrinsic motivation relative to a control group (Lepper, Greene, & Nisbett, 1973; Calder & Staw, 1975).

To date, neither of these theories has been able to adequately explain the contradictory findings concerning the effects of contingent and noncontingent rewards on intrinsic motivation. Explanations derived from these theories are often post-hoc and circular rather than predictive. If a decrease in intrinsic motivation occurs, then the reward must be salient (or controlling), if no decrease occurs the reward must not be salient (or was informational). Researchers need to be able to specify when a reward will be salient or controlling.

Situational norms for reward or nonreward may be contributing to the conflicting results of experiments involving contingent and noncontingent rewards. The salience of a reward in a given experiment may depend upon the existing norms for payment or nonpayment. Staw, Calder, and Hess (1975) have proposed that rewards which are contrary to situational norms will be more salient and the individual will be more likely to attribute his/her behavior to the reward. Staw et al. conducted an experiment involving introductory psychology students, half of whom were led to believe they ought to be paid for participating in experiments, while the other half had no expectation of payment. Half of each group was then paid noncontingently for participating in an experiment involving an interesting task. Payment was found to decrease intrinsic motivation only when a norm for nonpayment existed. Other experiments have demonstrated that payment which is an integral part of the task does not decrease intrinsic motivation (Kruglanski, Riter, Amitai, Margolin, Shabtai, & Zaksh, 1975). The experiment to be presented here will investigate the potential moderating effect of situational norms for payment on the relative effects of contingent and noncontingent payment on intrinsic motivation.

To sum up, self-perception theorists propose that any salient reward can decrease intrinsic motivation regardless of the contingency involved and that rewards will be more salient when no norm exists for reward. Cognitive evaluation

theory predicts that contingent rewards should be viewed as more controlling than noncontingent rewards and therefore should be more detrimental to intrinsic motivation. Although cognitive evaluation theory does not address the issue of situational norms for reward, one might speculate that less attention would be given to rewards when a norm for reward exists. Hence, the differential effect of contingent and noncontingent rewards might be reduced in the presence of a norm for reward. The experiment reported here was designed to investigate the independent and joint effects of reward contingency and norms for reward on intrinsic motivation for a task.

Method

Overview

A 2 x 2 factorial design was employed, the first factor being reward contingency (contingent vs. noncontingent) and the second factor being situational norms regarding payment (norm for payment vs. norm for nonpayment). A fifth group was included as a control for comparison purposes. This group did not expect to be paid and was not paid.

Subjects

Ninety-two male introductory psychology students participated in the experiment. Seven of the subjects had to be dropped from the study due to procedural problems. All of the subjects received course credit for their participation.

Manipulation of Payment Norm

Norms for payment were varied through manipulating the subject's expectancy for payment. Since introductory psychology students are usually not paid for participating in experiments, a norm for nonpayment exists. When subjects were contacted by the experimenter to schedule a session, half of them were explicitly reminded of this norm. The other half of the subjects were led to believe that the experiment was funded and that all funded projects involve subject payment. Hence, these subjects expected to be paid and were led to believe that subject payment is the norm for funded projects.

Procedure

Subjects participated in individual sessions conducted by a male experimenter. Subjects were told that the experiment had to do with problem solving strategies

in the context of games and that they would be playing an electronic television handball game. After a general introduction, contingent subjects were told that they would be paid a base rate of $1.00 and could win up to $1.40 more depending upon their performance. Noncontingent subjects were told how much they would be paid for participating in the study. Each noncontingent subject was yoked to a previously run contingent subject in the same norm group and was paid the amount earned by that contingent subject.

The experimenter next demonstrated the handball game to the subject and explained that the object of the game was to keep the score as low as possible. After a two-minute practice trial each subject filled out a questionnaire assessing his previous experience with tasks of this sort and how enjoyable he found the task. Four two-minute experimental trials ensued on which subjects were asked to try to keep their score at or below a criterion score. The criterion score was determined from the subject's practice trial score so as to provide a challenge appropriate for his skill. In addition, contingent subjects were told they would win 35¢ on each trial they kept their score at or below the criterion. After the experimental trials, the experimenter left the room to get a second questionnaire and the payment. Before leaving, the experimenter invited the subject to keep playing with the handball game or any of the other games in the room (Soma, Space Probe, anagrams). The experimenter also pointed out some recent issues of magazines the subject could read while waiting. The amount of time subjects spent with the handball game during this period was recorded by a hidden timer attached to the start mechanism of the game. At the end of 10 minutes, the experimenter returned with the questionnaire. Upon completing the questionnaire the subject was given a feedback sheet and paid if appropriate. The post-experimental questionnaire included several items assessing intrinsic motivation as well as several other items including an assessment of task difficulty and self-perceived competence and effort expended.

Intrinsic Motivation Measures

Intrinsic motivation was assessed through both questionnaire items and a behavioral measure. On the pre-experimental questionnaire subjects were asked how enjoyable they found the task. At that point norms for payment had been established, noncontingent subjects knew how much they would be paid, and contingent subjects knew their payment would depend upon their performance but they were not aware of the performance criterion. The post-experimental

questionnaire contained three items which assessed intrinsic motivation. These included how interesting the subjects found the task, how enjoyable they found the task, and whether or not they would be willing to volunteer for a future experiment using the same type of task but with no money or course credit as remuneration. All questionnaire measures were assessed on a 100-point scale. The final measure of intrinsic motivation involved how much time the subjects spent playing with the game while the experimenter was gone. This was measured by the hidden timer attached to the foot pedal which turned the game on and off. Free time spent on the task was measured in seconds and could range from 0 to 600.

Results

Preliminary Analysis

In order to determine whether or not subjects found the handball game intrinsically interesting, the overall mean enjoyment ratings on the pre- and post-experimental questionnaires ($\bar{X}$ = 67.7 and 64.3) were compared to the midpoint value of the scale, 50. In each case, subjects rated the task significantly higher than the midpoint of the scale ($p < .01$ for each) indicating that the task was more enjoyable than not. However, the overall mean rating of task difficulty was 17.6 indicating that subjects found the task quite easy. In addition, 68% of the subjects were able to keep their scores at or below the criterion on all four trials. It had been expected that subjects would be able to achieve this level of performance on only two or three of the four trials. Hence the task only provided a low level of challenge which could cause the subjects to become bored with it.

Effects of Payment Norms and Contingency

An analysis of variance procedure for factorial experiments with a single control group was used (Winer, 1962, p. 468). In general, the results of the experiment did not reveal a decrease in intrinsic motivation due to payment. For all of the dependent variables, the four paid groups combined were not significantly different from the control group. However, there were some significant differences among the paid groups. Table 1 presents the mean scores for each of the groups on the dependent variables.

Insert Table 1 about here

There was a significant effect for situational norms for payment ($F = 5.21$, $p < .03$) and also for payment contingency ($F = 5.62$, $p < .03$) on the pre-experimental questionnaire enjoyment item. Payment-norm subjects found the task more enjoyable than the nonpayment-norm subjects, and contingently paid subjects found the task more enjoyable than noncontingently paid subjects. It should be noted that at the time this measurement was taken, the contingently paid subjects knew that their payment would depend upon their performance, but they were not yet aware of the performance criterion. The interaction effect was not significant for this variable. Finally, the nonpaid-norm-noncontingently paid group rated the task as significantly less enjoyable than did the control group ($F = 4.87$, $p < .05$). This was the only result indicating a significant decrease in intrinsic motivation due to payment. None of the other paid groups were significantly different from the control group.

On the post-experimental enjoyment rating only the main effect for situational norms was significant ($F = 4.20$, $p < .05$). Again, the payment-norm subjects found the task more enjoyable than the nonpayment-norm subjects. The payment contingency effect was not significant on this variable. Apparently, the contingent subjects expressed slightly less enjoyment on the post-experimental questionnaire relative to the pre-experimental questionnaire ($p < .09$), while there was little change for the noncontingent subjects.

A significant interaction effect ($F = 5.99$, $p < .02$) was found for subjects' ratings of task interest. The nonpayment-norm-noncontingently-paid group rated the task as less interesting than the other three paid groups ($p < .05$). Although the effect of the payment norm was not significant on this measure, the direction of the group means was consistent with the self-report measures of enjoyment. In addition, the question concerning volunteering for a future similar experiment revealed a tendency ($F = 2.86$, $p < .10$) for payment-norm subjects to be more willing to volunteer than nonpayment-norm subjects.

Finally, analyses of the free time measure revealed no significant differences among the groups.

Discussion

In general, the results of this experiment support the prediction of self-perception theory that rewards may not be detrimental to intrinsic motivation when they are perceived as a part of the normal operating procedure. In fact, the results suggest that rewards may enhance intrinsic motivation when they are consistent with the existing situational norms.

The predictions of cognitive evaluation theory were not supported. This theory suggested that contingently paid subjects would be expected to demonstrate less intrinsic motivation that would noncontingently paid subjects. Contrary to this expectation, when the nonpayment-norm groups were examined, there was a tendency for the contingent subjects to find the task more interesting and enjoyable than the noncontingent subjects. When both norm groups were examined, contingent subjects rated the task as more enjoyable than did noncontingent subjects on the pre-experimental questionnaire. No significant differences were found between these groups on the other measures of intrinsic motivation. If anything, it appears that the contingent payment enhanced the subjects' enjoyment of the task.

The conclusions to be drawn from this experiment must be tempered by the fact that there was little evidence for an overjustification effect. The nonpayment-norm contingent and noncontingent groups combined scored lower than the control group on each of the questionnaire measures of intrinsic motivation, however none of these differences were statistically significant. Hence, violating a situational norm may not have a serious effect on intrinsic motivation.

Finally, the results of this experiment suggest that researchers should be more cautious in making generalizations from experimental settings to applied situations. Suggestions that the use of grades and other reward procedures in the classroom may reduce intrinsic motivation may be incorrect. The results of this experiment suggest that since the classroom setting already has a norm for grading and the dispensing of rewards for good performance, the use of these procedures may not be detrimental to intrinsic motivation. However, this conclusion must be tested in a classroom setting before the issue can be resolved.

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Table 1

Group Means on Dependent Measures of Intrinsic Motivation

Variable	Group				
	Nonpayment Norm			Payment Norm	
(n)	Control (18)	Noncontingent (17)	Contingent (17)	Noncontingent (16)	Contingent (17)
Pre-Enjoyment	68.9 (22.4)[a]	56.0 (17.4)	69.1 (17.0)	68.7 (14.4)	75.7 (13.2)
Post-Enjoyment	62.0 (22.6)	55.1 (24.7)	64.6[b] (19.2)	71.3 (18.5)	69.2 (16.0)
Interest	55.2 (22.5)	44.5 (26.4)	63.8 (20.0)	65.4 (17.9)	58.7 (21.0)
Volunteering	52.7 (25.0)	55.7 (25.2)	49.6 (25.0)	64.2 (22.0)	60.7 (21.3)
Free Time	156.6 (203.4)	281.2 (212.9)	179.9 (222.9)	250.4 (151.7)	230.5 (199.5)

[a] Numbers in parentheses are standard deviations.

[b] n=16 for this mean due to missing data.